

## WW I R/C AIRCOMBAT, Finland 2009

### 1.1 About R/C Air Combat

The game *R/C Air Combat* is designed to recreate the air wars of WW 1 in a historical perspective, in a enjoyable, safe, scale competition that will be interesting for spectators and challenging for the contestants.

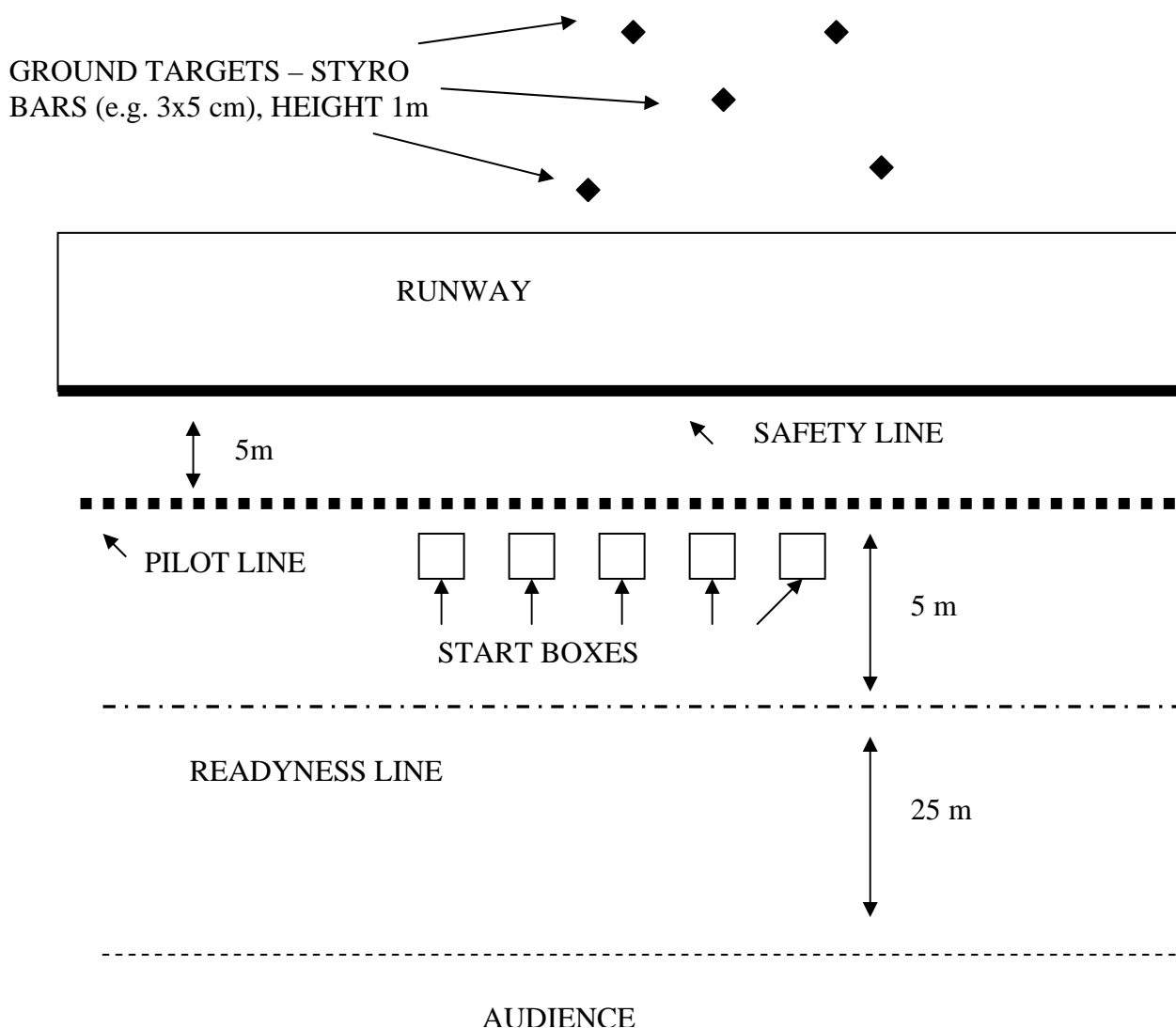
### 1.2 General rules

All FAI regulations covering the R/C-flier, his plane and equipment, shall apply to this event, except as noted herein. The contestant is solely responsible for airworthiness of A/C used incontest. The arranging group and the main judge, are responsible of frequency control during the event.

### 1.3 Safety

Safety matters have always highest priority. Any conduct by a contestant deemed by the main judge or contest arranging group to be hazardous, will be cause for immediate disqualification of the contestant from the event. Any contestant that is not known to the arranging group, might be ordered to make a test flight, to prove that he is capable of flying a 1/8 scale warbird.

## 2. Contest site



## 2.2 Flight area

The flight area is always in front of the safety line. The safety line is parallel to the pilots line, situated 5m in front of the pilots line. During all day of the contest, all A/C must fly in front of the safety line (as soon as the safety line is drawn up). Note that safety line penalties are given all day, if A/C crosses the safety line (including test-flights before, in-between and after fights). Any model that ends up in front of the landing zone may not be fetched during the fight, or while other models are airborne.

## 2.3 Start pits and readiness area

The *start pits* are placed with three meters in-between. The *readiness area* is placed behind a line approximately 5 meters behind the start pits. At readiness, pilots and helpers must be behind this line.

## 2.4 Audience

The audience should be kept at a safe distance (at least 35m) behind the safety line, or be protected by protective devices, such as nets, etc. The area protected by safety nets is defined as an area starting from the point where the net ends, and to a distance equal to the net height. This means that for a 3m vertical net, the safe area is measured from behind the net and 3 meters back. In addition, the first meter behind the net should be considered as unsafe. All other areas within 35 meters from the safety line should be fenced off, for people not wearing hardhats.

## 2.5 First Aid

On the contest site, a spot should be marked up as the first aid spot. At this spot, basic first aid equipment should be available for instant use, in case of an accident.

## 3 Equipment

### 3.1 The model

The model must be a scale or semi scale A/C of a warbird, which took part in WWI battles from August 1914 to 11th November 1918. The original A/C engine must have a take off power of at least 60hp . The scale is 1:8 and the wing span and fuselage length may not deviate more than +/- 5% from scale. All other measures may not deviate more than 2cm from scale. The fuselage length is measured in-between the leading edge and the rear edge of the fuselage, or the backside of the propeller(s), if any.

The wing thickness must be 10% or more, measured at the thickest point of the chord. The profile should have plain bottom (90% of profile length) or a concave bottom. Ideal is a profile with 12%. (e.g. Clark Y ) Exception: Original concave profiles can keep the original thickness. The wings shall preferably be build like the original in spars and ribs. Usage of EPP, Elapor or similar unbreakable expanded polypropylene material for the wings is not allowed. An original build-up wing gets 30 optional points.

Front view of wing: If the original aircraft had a clearly visible deviation/crank (dihedral angle), the model aircraft should be manufactured to look like the original by using a suitable angle change.

Top view of wing: If the original aircraft wing outline had a clearly visible deviation or angle change (trapezoid), the model aircraft should be manufactured to look like the original by using a suitable angle change at the leading and/or trailing edges.

No protruding devices may exist on the front leading edge of the wing, stabilizer and fin. The A/C must look similar to the original A/C, including painting and decorations. The competitor should bring a published 3-plane view of the original A/C-type, in at least 1:72 scale, to the competition to show that his A/C is accurate according to the measures. The contestant does not have to be the builder of the model. The model can have installed dummy machine guns on original positions.

### 3.2 Engine

All engines must use a muffler. Tuned pipes or minipipes are not allowed to be used. Mufflers made by other manufacturers may be used. Extension parts may be used to get the muffler outside of the fuselage. The contestant must be able to shut-off the engine in the air, whatever the attitude of the A/C.

### 3.3 Engine size

Allowed are:

- 4 - stroke (.30) 5 ccm engine or less;
- 2 - stroke (.15) 2,5 ccm engine or less;
- all types of electric engines;

All engines must be unmodified.

### 3.4 Engine performance and propeller

The following table applies the maximum RPM for each pitch. For all engine types.

RPM	pitch	sum
12.000	4	48.000
16.000	3	48.000
8.000	6	48.000

Limiting the E-engines with the accu capacity. Maximum is 37Wh. Example 3S3300mAh or 4S2500mAh.

Revolution measurement is executed in certain cases, based on the main judges and/or organizers decision. Revolution measurement, if any, has to take place before the heat during readiness.

The RPM is measured at full throttle, and with the needle setting used in contest. The measuring party should have full access to both the engine/model and the controlling transmitter. It is the contestant's responsibility to ensure that the engine is within the limits using the RPM meter(s) used by the arranging group. Only propellers that are commercially available in the country the contest is held may be used. As commercially available means that the propeller can be bought in normal hobby shops.

### 3.5 Model weight

Min. weight for any model is 800g.

Max. weight for any model (without fuel, but including all batteries) is 1800g.

### 3.6 Streamer

The streamer is 12 - 15 meters long one piece. It shall be 10-15mm wide. Material shall be suitable for proper indication of cuts, e.g. withstand moisture. The streamer is marked on both ends for about 0,4 meters respectively.

### 3.7 Helmet

A *helmet* must be used by any person that is in front of the audience line. The helmet should cover the upper part of the head and put up with a direct hit of an A/C.

### 3.8 Radio equipment

Every contestants radio equipment should be range checked before the contest. The contestant is responsible for proper operation of the radio equipment.

## 4 The contest

### 4.1 Structure

Each *flight* consists of at least two and at most six pilots that fly against each other. When all pilots have flown exactly one flight, this is called a *round*. The next round, flight-lists are changed to make it possible for as many pilots as possible to meet each other in different flights. The number of rounds flown at a contest is decided by the arranging group, and must be told in the contest-invitation. The number of rounds is recommended to be 3. contest also has a *final* which is flown after the rounds In the final, the seven pilots with the highest scores meet. The pilot who has most points after the final wins the contest.

### 4.1.2 Helpers

Every contestant may have a helper. Only one helper is allowed to be with the pilot line during the fight.

## 4.2 Fights

A fight is divided into three parts: The *preparation, readiness and flight part*.

### 4.2.1 The preparation part

The length of the preparation part may be set by the arranging group, but is recommended to be 7 minutes at smaller contests. It is marked by the main judge blowing three signals in his whistle and calling out "Seven minutes to readiness". During the preparation-part test flights may be performed. 30 seconds before the preparation-part ends the main judge blows two signals in his whistle and calls out "30 seconds to readiness".

### 4.2.2 The readiness part

Readiness follows immediately after the preparation part, and is marked by the main judge calling out "Readiness". During readiness all pilots and helpers shall be behind the readiness line. Exceptions will be made in the case of revolution measurements (resp.3.4) All equipment must remain in the start pits, and engines may not be running. Readiness may vary in length, upon the main judges decision.

### 4.2.3 The flight part

The flight part is divided into three parts: *take off, battle and landing*. The flight part starts when the main judge blows one long signal.

#### 4.2.3.1 Take-off

After signal from main judge, pilots and their helpers start the engines and put the models on the runway. When all models are on the runway and pilots and helpers behind the safety line the main judge gives the signal for take-off. At that time the clock is on (7 min). All planes start the same time. During takeoff attacks on ground targets, or enemy streamers are NOT allowed! If pilot has problems with take off, he must wait until all models are safely away. Then he can pick his model and start again.

Alternative take-off method:

A signal is given and pilots have two minutes time to get their planes in the air from runway. After two minutes a signal is given and the clock is on (7 min). During the 2 min takeoff time, attacks on ground targets, or enemy streamers are NOT allowed!

If the streamer is not intact at the take off moment (first take-off), no point is counting. The AC must land and pick up a new streamer.

#### 4.2.3.2 Battle

Battle lasts 7 min. In battle attacks are allowed only from behind! Attacks on ground targets are always in same direction (direction is given by the main judge), to prevent head on collisions.

#### 4.2.3.3 Landing

After 7 min of battle, the main judge gives the signal for landing (clock is stopped). Each pilot should try to land on runway. Correct landing is when plane stops on wheels on the runway.

## 4.3 Restarts

An unlimited number of restarts are allowed during a fight. When a pilot attempts to fetch his plane from the landing zone during a heat he must get a permission from the main judge. The main judge then gives an alarm and ensures that all the pilots are aware of the situation. A restart must be made from the same place the first start was made. Restarts are only allowed if the model ends up in the landing zone, after landing. Restarts shall be conducted solely between the start pit allocated to the individual pilot and the safety line.

#### 4.4 Change of A/C

The same A/C must be used throughout one fight. A new A/C may be used the next fight. The model is defined as main parts of fuselage and wing.

### 5. Points

#### 5.1 Flight points

##### 5.1.1 Flight points

Maximum flight-time is seven minutes. One point per three seconds airborne is given.

##### 5.1.2 Crossing of lines

A crossing is made when A/C is airborne.

##### 5.1.2 Safety line crossing

The first time a pilot crosses the safety line with a model during a contest, the pilot receives a minus point penalty. The second time a pilot crosses the safety line with a model, the pilot is immediately disqualified from the contest and ordered to land immediately if airborne.

##### 5.1.3 Lost streamer

It is the contestants responsibility to get airborne with a streamer of appropriate and full stretched length attached to his A/C. After landing, missing or entangled streamer counts as lost (no +50p given), except if the streamer was lost during landing, which must be proved by finding the missing streamer. To gain the intact streamer bonus, the model and streamer must have been airborne during the fight at least 10 seconds.

##### 5.1.4 Streamer cut

A contestant that cuts streamer off an enemy A/C in the air, gains +100p. If having an enemy streamer stuck to the model, the following rules apply: A cut made to a stuck streamer, counts as a cut on enemy streamer, and the contestant making the cut gains +100p. If having a stuck streamer cut by an opponent, the contestant does not lose his streamer-points. Only cuts made to the streamer actually attached to the contestant's model count. If during one flyby cuts are made to several streamers (own and stuck) or several cuts are made to the same streamer, this only counts as one cut made to enemy streamer.

If the attacking plane makes a streamer cut and kills the defending aircraft, in the same attack/fly by, due to a collision. This streamer cut is not counted (no cut points awarded).

##### 5.1.5 Ground target hit

For a successful ground attack, pilot gets +50 points. Successful ground attack is when model breaks the styro bar. At that time the model must be airborne and continue flying after attack (no diving into the ground target).

##### 5.1.6 Take-off

For successful take off from ground, pilot gets +30 points.

##### 5.1.5 Landing

For successful landing (4. 2. 3. 3) on runway after end of battle pilot gets +30 points. (landings in middle of battle don't count for points).

##### 5.1.6 Collision

If two or more A/C have been apparently involved into a midair collision, a clear proceeding is applied: The contestant, whose A/C remains flying after a midair collision may decide to continue flying to gain further flight points. No kill points or consolation points will be given. Flight time shall be stopped when the fuselage of the A/C hits the ground.

## 5.2 Model points

### 5.2.1 4-stroke engine

If model uses 4-stroke engine, pilot get +50 points.

### 5.2.2 More wings

Planes with more than one wing (biplanes, triplanes, etc.), pilot get +50 points.

### 5.2.3 Ribbs and spars

Planes made of ribbs and spars, pilot get +30 points.

### 5.2.3 Dummy pilot on board

If the cockpit is open, a pilot must be on board. If dummy pilot on board, pilot get + 10 points.

### 5.2.4 Dummy machine guns

If plane has dummy machine guns, pilot get +10 points.

### 5.2.5 Bracing wires

If the original wing has struts, the model must have these too. For cable wires, the model can get 10 optional points.

## 5.3 Tie

If the final points are equal for two pilots, the one with highest points in the final wins. If it is still equal, the pilot with the highest points from one single fight (except from the final) in the contest wins.

## 6. Other

### 6.1 Frequencies

Contestants must be able to change between at least two frequencies. When a frequency collision occurs in the final, the contestant with the lowest total score shall change frequency. This change must be given extra time, so that the preparation part of the final does not start until the change is done. It is the contestants responsibility to avoid frequency-collisions at changes from the given frequency.

### 6.2 Complaints

If the weather or other conditions gets bad at a contest, or as soon as a participating pilot complains about the weather, or other conditions to the arranging group, the arranging group shall take a ballot among the pilots to decide if the contest should be postponed, or cancelled and how the results from the contest should be decided.

### 6.3 Protest

Any contestant can make a protest against judges decisions. Protests shall always be decided by taking a ballot among the contestants. This should be done as soon as possible. A protest charge should be taken. If the protest is sustained, the protest charge is returned.

## 6.4 Judges

### 6.4.1 Main judge

The *main judge* is responsible for the overall timing of the contest. He is also responsible for keeping contestants behind the safety line when A/C are airborne. Cheating resp. the attempt to cheat shall be avenged with disqualifying the contestant. The main judges decision shall be based on a pilots voting.

### 6.4.2 Safety judge

The *safety judge* is responsible for the overall safety of the contest. This judge has higher authority than the main judge, when it comes to safety. The safety judge should warn for safety hazards during a fight. He shall position himself in such a kind that he is able to spot safety line crossings clearly. He is also responsible of that there are no people not wearing hard hats outside of any safety net zone(s), or closer to the safety line than 60 meters.

### 6.4.3 Pilot judge

The *pilot judge* is obliged to note points for the pilot on a scoreboard, and keep record of the pilots flight-time. Furthermore he or she is responsible to register safety line crossing together with the safety judge, no engagement and collision and to check the pilot's streamer after the fight as well. The pilot judge shall check the A/C before and immediately after the heat regarding streamers or parts of it sticking to the A/C. This shall take place in accordance with the pilot, confirmed by a signature on the pilot's card. If situation remains obscure after landing, the main judge has to draw a decision immediately.

## 7. Point system

**RED – FLY POINTS, GREEN – MODEL POINTS**

TAKE-OFF	30
CUT	100
OWN STREAMER OK	50
FLIGHT TIME	1p/3sec
GROUND TARGET	50
SAFETY LINE	-200
LANDING	30
4-STROKE ENGINE	50
BIPLANE / TRIPLANE	50
SPARS + RIBS	30
PILOT DUMMY	10
BRACING WIRES	10
DUMMY GUNS	10

Model points, max total 150p.